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TITLE: INFORMATION REPRODUCING APPARATUS AND  
METHOD OF SAME

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INFORMATION REPRODUCING APPARATUS AND METHOD OF SAME

## BACKGROUND OF THE INVENTION

## 5           1.    Field of the Invention

          The present invention relates to an information reproducing apparatus for reproducing broadcast information including commercial broadcast information and to a method of the same, for example, relates to an information reproducing apparatus for reproducing a television broadcast, radio broadcast, etc. including commercial broadcast and to a method of the same.

## 10           2.    Description of the Related Art

          As a recording and reproducing apparatus of a television broadcast, a video tape recorder (VTR) has been generally used, but along with the partial digitalization of television broadcasts and the drop in price of hard disk drives in recent years, recording and reproducing apparatuses storing digital television signals using hard disk drives have been appearing.

          In a time shift viewing of television broadcasts using VTRs, the general practice is to view just the intended broadcast by playing back the tape while fast forwarding over the commercial portions contained in the broadcast or by not recording the

commercial portions by using a commercial cutting function provided in the VTR.

However, even if fast forwarding in the VTR, the image is not erased, so it is possible to obtain a grasp of what kind of commercial is being broadcast. When an image catching the eye of the viewer is included, sometimes the fast forwarding is stopped and the commercial broadcast is watched.

Further, with the commercial cutting function of a VTR, the commercial portion is detected from for example the type of the audio signal (stereo broadcast or not), but when the target broadcast is a stereo broadcast, a commercial portion, which is usually broadcast in stereo, cannot be detected. Also, there is also the method of detecting a commercial broadcast from a strength of the sound or the interval between scene changes, but if the detection is imperfect, the commercial broadcast cannot be completely eliminated or part of the target broadcasts sometimes ends up also being cut.

Summarizing the disadvantages, in a recording and reproducing apparatus using a hard disk drive or other storage device with a high access speed, the speed of searching through a broadcast content is raised in comparison with a VTR mechanically winding up a tape, so

when skipping just commercial broadcasts at the time of reproduction, there is a possibility in the viewer will no longer view the commercial broadcasts much at all.

On the other hand, television stations, which  
5 provide broadcast contents free to the viewers, obtain almost all of their revenue from advertisement fees obtained by broadcasting commercial broadcasts.

Therefore, if such time shift viewing by recording and reproducing apparatuses becomes prevalent in society and  
10 broadcasted commercials are no longer watched by viewers, the advertising effect of broadcasted commercials will end up falling, advertisement revenue will fall, and stations may even be unable to continue operating.

15 SUMMARY OF THE INVENTION

An object of the present invention is to provide an information reproducing apparatus for making sure the viewers watch the commercial broadcast information contained in broadcast information and a method of the  
20 same.

To attain the above object, according to a first aspect of the present invention, there is provided an information reproducing apparatus having a storing means for storing a sequentially supplied series of broadcast  
25 information including commercial broadcast information

linked with a supplied sequence, a commercial detecting means for detecting the commercial broadcast information from the broadcast information based on predetermined identification information contained in the broadcast information, a reproducing means for reproducing broadcast information stored in the storing means, and a controlling means for sequentially reading the detected commercial broadcast information from the storing means and making the reproducing means reproduce it and, when the detected commercial broadcast information is all reproduced, sequentially reading another series of broadcast information other than the related commercial broadcast information from the storing means and making the reproducing means reproduce it in accordance with the supplied sequence.

Preferably, the controlling means generates a viewing confirmation message at least one time, makes the reproducing means reproduce it, and suspends a read operation of the broadcast information from the storing means at the time of reproduction of the commercial broadcast information and restarts the read operation of the broadcast information when a response signal with respect to the related viewing confirmation message is detected.

In the information reproducing apparatus according

to the first aspect of the present invention, the sequentially supplied series of broadcast information is stored in the storing means linked with the supplied sequence. Also, the commercial detecting means detects  
5 the commercial broadcast information from the broadcast information based on predetermined identification information contained in the broadcast information.

At the reproduction of the series of broadcast information, first, the detected commercial broadcast  
10 information is sequentially read from the storing means and reproduced at the reproducing means. When the detected commercial broadcast information is all reproduced, another series of broadcast information other than the related commercial broadcast information is  
15 sequentially read from the storing means in accordance with the supplied sequence and reproduced at the reproducing means.

Also, at the time of reproduction of the commercial broadcast information, a viewing confirmation message is  
20 generated at least one time and reproduced at the reproducing means and the read operation of the broadcast information from the storing means is suspended. When a response signal with respect to the related viewing confirmation message is detected, the read operation of  
25 the broadcast information is restarted.

According to a second aspect of the present invention, there is provided an information reproducing apparatus having a storing means for storing a sequentially supplied series of broadcast information including commercial broadcast information linked with a supplied sequence, a commercial detecting means for detecting the commercial broadcast information from the broadcast information based on predetermined identification information contained in the broadcast information, a reproducing means for reproducing the broadcast information stored in the storing means, an inputting means for inputting a commercial designation signal for designating the commercial broadcast information to be reproduced at the reproducing means, and a controlling means for sequentially reading the series of broadcast information from the storing means and making the reproducing means reproduce it in accordance with the supplied sequence, generating image information corresponding to the detected commercial broadcast information and combining the same with the reproduced image of the series of broadcast information, and making the reproducing means reproduce it, and, when the commercial designation signal is input, reading the commercial broadcast information designated by the related commercial designation signal from the storing

means and making the reproducing means reproduce it, and, in the following reproduction of the series of broadcast information, reproducing the broadcast information while not reproducing, but skipping over the commercial

5 broadcast information which has been already reproduced.

In the information reproducing apparatus according to the second aspect of the present invention, a sequentially supplied series of broadcast information is stored in the storing means linked with the supplied  
10 sequence. Also, the commercial detecting means detects the commercial broadcast information from the broadcast information based on predetermined identification information contained in the broadcast information.

At the time of reproduction of the series of  
15 broadcast information, the series of broadcast information is sequentially read from the storing means and reproduced at the reproducing means in accordance with the supplied sequence. At the same time, image information corresponding to the detected commercial  
20 broadcast information is generated, combined with the reproduced image of the series of broadcast information, and reproduced at the reproducing means. Then, when a commercial designation signal for designating commercial broadcast information reproduced at the reproducing means  
25 is input to the inputting means, the commercial broadcast



information designated by the related commercial designation signal is read from the storing means and reproduced at the reproducing means. At the following reproduction of the series of broadcast information, the  
5 already reproduced commercial broadcast information is not reproduced but is skipped and only the other broadcast information is reproduced.

According to a third aspect of the present invention, there is provided an information reproduction  
10 method comprised of a storage step for storing a sequentially supplied series of broadcast information linked with a supplied sequence, a commercial detection step for detecting commercial broadcast information from the broadcast information based on predetermined  
15 identification information contained in the broadcast information, and a reproduction step for extracting and reproducing the detected commercial broadcast information from the broadcast information stored at the storage step and, when the detected commercial broadcast information  
20 is all reproduced, sequentially extracting and reproducing another series of broadcast information other than the related commercial broadcast information from the broadcast information stored at the storage step in accordance with the supplied sequence.

25 Preferably, the reproduction step is for generating

and reproducing a viewing confirmation message at least one time and suspending the reproduction of the broadcast information at the time of reproduction of the commercial broadcast information and restarting the reproduction of the broadcast information when a response signal with respect to the related viewing confirmation message is detected.

In the information reproduction method according to the third aspect of the present invention, the sequentially supplied series of broadcast information is stored linked with the supplied sequence, and the commercial broadcast information is detected from the broadcast information based on the predetermined identification information contained in the broadcast information. At the time of reproduction of the series of broadcast information, first, the detected commercial broadcast information is extracted from the broadcast information stored at the storage step and reproduced. When the detected commercial broadcast information is all reproduced, another series of broadcast information other than the related commercial broadcast information is sequentially extracted and reproduced from the broadcast information stored at the storage step in accordance with the supplied sequence.

Also, a viewing confirmation message is generated at

least one time and reproduced and the reproduction of the broadcast information is suspended at the time of reproduction of the commercial broadcast information. The reproduction of the broadcast information is restarted  
5 when a response signal with respect to the related viewing confirmation message is detected.

According to a fourth aspect of the present invention, there is provided an information reproduction method comprised of a storage step for storing a  
10 sequentially supplied series of broadcast information linked with a supplied sequence, a commercial detection step for detecting commercial broadcast information from the broadcast information based on predetermined identification information contained in the broadcast  
15 information, and a reproduction step for sequentially extracting and reproducing the series of broadcast information from among the broadcast information stored at the storage step in accordance with the supplied sequence and, at the same time, generating image  
20 information corresponding to the detected commercial broadcast information and combining the same with the reproduced image of the series of broadcast information, and, when the commercial designation signal is input, extracting and reproducing the commercial broadcast  
25 information designated by the commercial designation

signal from the broadcast information stored at the storage step and, in the following reproduction of the series of broadcast information, reproducing the broadcast information while not reproducing, but skipping the already reproduced commercial broadcast information.

In the information reproduction method according to the fourth aspect of the present invention, the sequentially supplied series of broadcast information is stored linked with the supplied sequence, and commercial broadcast information is detected from the broadcast information based on predetermined identification information contained in the broadcast information. At the time of reproduction of the series of broadcast information, the series of broadcast information is sequentially extracted and reproduced from the broadcast information stored at the storage step in accordance with the supplied sequence and, at the same time, image information corresponding to the detected commercial broadcast information is generated and combined with the reproduced image of the series of broadcast information. When the commercial designation signal is input, the commercial broadcast information designated by the commercial designation signal is extracted and reproduced from the broadcast information stored at the storage step. At the following reproduction of the series of

broadcast information, this already reproduced commercial broadcast information is not reproduced but skipped, and only the other broadcast information is reproduced.

5 BRIEF DESCRIPTION OF THE DRAWINGS

These and other objects and features of the present invention will become clearer from the following description of the preferred embodiments given with reference to the attached drawings, wherein:

10 FIG. 1 is a view of an example of the configuration of an information reproducing apparatus according to the present invention;

FIG. 2 is a view of another example of the configuration of an information reproducing apparatus  
15 according to the present invention;

FIG. 3 is a flow chart for explaining an example of a recording operation of broadcast data in a first embodiment of the present invention;

FIG. 4 is a flow chart for explaining an example of  
20 a reproduction operation of broadcast data in the first embodiment of the present invention;

FIGS. 5A and 5B are views showing examples of received broadcast data;

FIG. 6 is a flow chart for explaining an example of  
25 the reproduction operation of the broadcast data in a

second embodiment of the present invention; and

FIG. 7 is a view of an example of a reproduced image of the broadcast data.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

##### 5 <First Embodiment>

First, an explanation will be made of a first embodiment of the present invention by referring to FIG. 1 to FIGS. 5A and 5B.

FIG. 1 is a view of an example of the configuration of an information reproducing apparatus according to the present invention. The information reproducing apparatus 10 100 shown in FIG. 1 has a demodulator 1, analog/digital (A/D) converter 2, storage unit 3, digital/analog (D/A) converter 4, reproduction unit 5, commercial detector 6, 15 controller 7, and input unit 8.

Below, an explanation will be made of the components of FIG. 1.

The demodulator 1 receives a broadcast signal  $S_v$ , demodulates it, and outputs the resultant signal to the 20 A/D converter 2. For example, it selects the signal of a specific station from broadcast signals received at a not illustrated antenna, performs intermediate frequency amplification and detection for this to reproduce a composite video signal, further demodulates this to 25 generate a luminance signal and a color difference signal

or a color signal, and outputs the result to the A/D converter 2. Also, it performs intermediate frequency amplification and detection also on for example an audio signal contained in the broadcast signal, reproduces this, and outputs the result to the A/D converter 2.

The A/D converter 2 digitizes the broadcast signal containing the image signal, audio signal, etc. demodulated at the demodulator 1 and outputs the same to the storage unit 3 and the commercial detector 6.

The storage unit 3 stores the data of the broadcast signal (broadcast data) digitized at the A/D converter 2 in sequence under the control of the controller 7. Also, it stores the broadcast data linked with the sequence of digitalization at the A/D converter 2, that is, the sequence of the broadcast. Accordingly, by reading and reproducing the broadcast data of the storage unit 3 in sequence corresponding to this sequence, the broadcast data can be correctly reproduced in the sequence of the broadcast.

For example, by storing the broadcast data digitized at the A/D converter 2 and input to the storage unit 3 in sequence at an interval of a predetermined address from a predetermined header address, the address of the broadcast data and the input sequence of the data are linked, and the broadcast data can be read and reproduced

according to the input sequence.

The D/A converter 4 converts the digital broadcast data read from the storage unit 3 to an analog signal and outputs the same to the reproduction unit 5. For example, it outputs the analog luminance signal, color difference signal, and audio signal to the reproduction unit 5.

The reproduction unit 5 is a block for reproducing the image, audio, etc. from the analog signal from the D/A converter 4 and is comprised by for example a CRT or speaker. Note that, in the case of a liquid crystal display or other apparatus receiving digital data to reproduce an image, it is also possible to directly input the digital data from the storage unit 3 to the reproduction unit 5 without going through the D/A converter 4.

The commercial detector 6 detects commercial portions from the broadcast data based on the broadcast data digitized at the A/D converter 2 and notifies the detection result to the controller 3.

The most reliable method for detecting a commercial portion is to add information for identifying the commercial portion (identification information) to the broadcast signal in advance and detecting this. For example, it is also possible to superimpose commercial identification use data on a portion which is not used in



the broadcast signal (vertical retrace line period etc.)  
and detect this at the commercial detector 6.

Alternatively, it is also possible to insert an  
electronic watermark for commercial identification into  
5 the image data of the commercial portion and decode this  
at the commercial detector 6.

Also, it is possible to detect a commercial portion  
by detecting a scene change at which the reproduced image  
of the broadcast data changes discontinuously. In  
10 general, it is known that in a commercial broadcast there  
is one scene change every 1 to 2 seconds and that in an  
ordinary broadcast, even in a news broadcast where there  
is a relatively large number of scene changes, there is  
one scene change every about 7 to 10 seconds. Therefore,  
15 a commercial broadcast can be detected by utilizing the  
difference of time intervals of scene changes.

Also, it is possible to detect a commercial portion  
from the change of the audio level by utilizing the fact  
that the audio level of a commercial portion becomes  
20 louder in comparison with a usual broadcast.

Other various techniques relating to the detection  
of commercial portions can be applied to the commercial  
detector 6.

The controller 7 is a block for controlling the  
25 operation of the information reproducing apparatus 100

relating to the recording and reproduction of a broadcast signal according to instruction Sc of an user input from the input unit 8.

For example, when an instruction for storing the  
5 broadcast of a specific station to be broadcast at a  
specific time in the storage unit 3 as the broadcast data  
is input from the input unit 8, at this specific time,  
the demodulator 1 is made to receive and demodulate the  
broadcast signal of the specific station and the  
10 demodulated image signal and audio signal are converted  
to digital broadcast data at the A/D converter 2 and  
stored in the storage unit 3 in sequence. At this time,  
when a commercial portion is detected in the broadcast  
data at the commercial detector 6, information for  
15 specifying a storage area where the broadcast data of  
this commercial is to be stored in the storage unit 3 is  
stored in a not illustrated storage unit (or also the  
storage unit 3 can be used) in sequence. For example, the  
address at which the header data of the detected  
20 commercial portion is stored and the information  
concerning the commercial time contained in the broadcast  
data (that is information concerning the data length of  
the commercial portion) are stored linked with the  
sequence of detection of the commercial portion. The  
25 storage area of the commercial portion in the storage

unit 3 can be specified from the information of the stored address and data length.

Also, when an instruction for reproducing the broadcast data stored in the storage unit 3 is input from the input unit 8, first the commercial portion contained in the broadcast for which reproduction is instructed is read from the storage unit 3 in sequence based on the information specifying the storage region, this is converted to an analog signal at the D/A converter 4, then is reproduced as the image, audio, etc. at the reproduction unit 5. Then, when all of the commercial portions contained in this instructed broadcast are reproduced, the broadcast data of the other portion other than the commercial portions of this broadcast is sequentially read from the storage unit 3 and reproduced.

In addition to the mode of initially continuously reproducing only the commercial portions in this way, in accordance with an instruction Sc from the user, it is also possible to select a usual reproduction mode, that is, a mode of reproducing the broadcast data in sequence while keeping the sequence set at the station.

Also, in order to make sure that the user watches the commercial broadcast, it is also possible to have the user perform a certain input operation in the period where the commercial portions are continuously

reproduced. For example, in this commercial period, an image, audio, or other message prompting an input operation of the user is reproduced at the reproduction unit 5 and the reproduction of the commercial portions and the rest of the broadcast is suspended. When a response from the user with respect to this message is input to the input unit 8, the reproduction of the broadcast is restarted. By this, even in the continuous reproduction period of commercial portions, the attention of the user can be turned to the commercial broadcast.

The input unit 8 is a block for receiving as input an instruction Sc from the user and outputting the same to the controller 17. Various man-machine interfaces, for example, a remote controller generally attached to a VTR, television receiver, or the like or a mouse attached to a computer can be applied as this input unit 8.

The broadcast signal demodulated at the demodulator 1 of the information reproducing apparatus 100 shown in FIG. 1 is an analog signal, but the present invention can also be applied to the case where this is a digital data.

FIG. 2 is a view of another example of the configuration of the information reproducing apparatus according to the present invention. The broadcast signal demodulated in this example is compressed and encoded digital data. An information reproducing apparatus 101

shown in FIG. 2 has a demodulator 11, packet demultiplexer 12, storage unit 13, decoder 14, D/A converter 15, reproduction unit 16, commercial detector 17, controller 18, and input unit 19.

5       Note that, the storage unit 13, D/A converter 15, reproduction unit 16, controller 18, and input unit 19 in the example of the configuration of FIG. 2 have equivalent functions to those of the storage unit 3, D/A converter 4, reproduction unit 5, controller 7, and input  
10   unit 8 in the example of the configuration of FIG. 1, so an explanation for these will be omitted below and an explanation will be only made of the demodulator 11, packet demultiplexer 12, decoder 14, and commercial detector 17.

15       The demodulator 11 demodulates the digital demodulated broadcast signal and outputs packets of the broadcast data compressed, encoded, and/or multiplexed by a method of for example the MPEG2 to the packet demultiplexer 12.

20       The packet demultiplexer 12 demultiplexes and extracts the packets containing the target broadcast data from among the multiplexed packets of the broadcast data and outputs the same to the storage unit 13 and the commercial detector 17.

25       The commercial detector 17 detects the commercial

portions from the broadcast based on predetermined identification information contained in the packets extracted at the packet demultiplexer 12. Note that, it is also possible to apply other various commercial detection methods explained concerning the commercial detector 6 of FIG. 1 to this commercial detector 17.

The decoder 14 decodes the compressed and encoded broadcast data to reproduce the broadcast signal containing the image data, audio data, etc. and outputs this to the D/A converter 15.

Next, an explanation will be made of the concrete operation of the information reproducing apparatus shown in FIG. 1 or FIG. 2.

FIG. 3 is a flow chart for explaining an example of the recording operation of the broadcast data in the first embodiment of the present invention.

Step ST11:

In the information reproducing apparatus 100 of FIG. 1, when an instruction for recording a broadcast of a specific station at a specific time is set in the controller 7 by an instruction Sc of the user input to the input unit 8, the broadcast of the specific station is received and demodulated at the demodulator 1 at this specific time and the demodulated analog signal is digitized at the A/D converter 2 and stored in the

storage unit 3 in sequence.

In the same way, in the information reproducing apparatus 101 of FIG. 2, a broadcast of a specific station is received and demodulated at the demodulator 1 at a specific time in response to an instruction Sc of the user input to the input unit 19 and the packets of the specific broadcast are extracted from the demodulated packets at the packet demultiplexer 12 and stored in the storage unit 13 in sequence.

10 Step ST12:

It is detected at the commercial detector 6 (commercial detector 17 in FIG. 2) if the broadcast data stored in the storage unit 3 (storage unit 13 in FIG. 2) includes commercial portions. When it is detected that the broadcast data includes commercial portions, step ST13 is executed.

Step ST13:

When it is detected at step ST12 that the broadcast data contains commercial portions, information for specifying the areas where the commercial portions are stored in the storage unit 3 (storage unit 13 in FIG. 2) is stored in a not illustrated storage unit.

Step ST14:

It is decided at the controller 7 (controller 18 in FIG. 2) whether or not to finish the recording of the

broadcast data in the storage unit 3 (storage unit 13 in FIG. 2). For example, this is decided in accordance with the recording end time of the broadcast set by an instruction of the user from the input unit 8.

5 In this way, the commercial portions in the broadcast data stored in the storage unit 3 (storage unit 13 in FIG. 2) are specified. In the reproduction operation of the broadcast data mentioned next, the specified commercial portions are reproduced all together  
10 at the start of the reproduction.

FIG. 4 is a flow chart for explaining an example of the reproduction operation of broadcast data in the first embodiment of the present invention.

Step ST21:

15 When reproduction of the broadcast data stored in the storage unit 3 is instructed in an instruction Sc from the user input to the input unit 8, the commercial portions of the broadcast data whose storage areas are specified as mentioned above are read from the storage  
20 unit 3, converted to an analog signal at the D/A converter 4, and reproduced at the reproduction unit 5 as an image, audio, etc.

Similarly, in the information reproducing apparatus 101 of FIG. 2, the commercial portions of the broadcast  
25 data whose storage areas are specified are read from the



storage unit 13, decoded to the image data and audio data at the decoder 14, converted to an analog signal at the D/A converter 15, and reproduced at the reproduction unit 16.

5       Note that to make sure that the user watches the commercial broadcast, it is also possible to have the user to perform a certain input operation at this step. For example, an image, audio, etc. for prompting an input operation of the user is reproduced at the reproduction  
10   unit 5 (reproduction unit 16 in FIG. 2) and, at the same time, the reproduction of the commercial portions and rest of the broadcast is suspended. When a response from the user with respect to this is input to the input unit 8 (input unit 19 in FIG. 2), the reproduction of the  
15   broadcast is restarted. By this, even in the continuous reproduction period of commercial portions, the attention of the user can be turned to the commercial broadcast.

Step ST22:

It is decided at the controller 7 (controller 18 in  
20   FIG. 2) whether or not the reproduction of the commercial portions whose storage areas were specified in advance has finished. When the reproduction of the commercial broadcast has finished, the processing proceeds to step ST23, while when the reproduction has not been finished,  
25   the processing returns to step ST21, and the processing

for reproduction of the commercial portions which have not yet been reproduced is carried out.

Step ST23:

After the reproduction of the commercial portions  
5 has finished, the broadcast data other than the  
commercials is read from the storage unit 3 (storage unit  
13 in FIG. 2) and reproduced in sequence.

Step ST24:

It is decided at the controller 7 (controller 18 in  
10 FIG. 2) whether or not to finish the reproduction of the  
broadcast. For example, the reproduction of the broadcast  
is finished when the tail end of the broadcast data  
stored in the storage unit 3 (storage unit 13 in FIG. 2)  
is reached or when the end of reproduction of the  
15 broadcast is instructed by the user from the input unit 8  
(input unit 19 in FIG. 2). Also, when such conditions for  
the end of reproduction are not satisfied, the processing  
routine returns to step ST23, and the reproduction of the  
broadcast data is continued.

20 FIGS. 5A and 5B show examples of the received  
broadcast data.

FIG. 5A shows the broadcast data arranged in the  
sequence set on the station side. The broadcast data P1  
to broadcast data P12 of FIG. 5A show the commercial  
25 portions, while the broadcast data P101 to broadcast data

P103 show the broadcast other than the commercial broadcast. In the example of FIG. 5A, the broadcast other than the commercial broadcast is divided into three sections.

5       Also, identification data CMA-1 to identification data CMD-2 corresponding to the commercial portions and time data concerning the time of the commercial portions are added to the broadcast data of the commercial portions. By the detection of these data at the  
10       commercial detector 6 (commercial detector 17 in FIG. 2), the commercial portions are identified from the broadcast data.

FIG. 5B shows broadcast data whose reproduction sequence is changed at the information reproducing  
15       apparatus shown in FIG. 1 or FIG. 2. All of the broadcast data of the commercial portions inserted in the broadcast data of FIG. 5A are collected in an initial stage of the reproduction, while the broadcast other than the commercial portions are collected after that.

20       As explained above, according to the information reproducing apparatus shown in FIG. 1 or FIG. 2, a sequentially supplied series of broadcast data is stored in the storage unit 3 (storage unit 13 in FIG. 2) linked with the supplied sequence. Also, based on the  
25       predetermined identification information contained in

this broadcast data, the commercial portions of the broadcast data are detected at the commercial detector 6 (commercial detector 17 in FIG. 2). At the time of reproduction of the broadcast data, the detected commercial portions are first read from the storage unit 3 (storage unit 13 in FIG. 2) in sequence and reproduced to image, audio, etc. at the reproduction unit 5 (reproduction unit 16 in the figure). Then, when the detected commercial portions are all reproduced, the other series of broadcast data other than the commercial portion is read from the storage unit 3 (storage unit 13 in FIG. 2) in sequence in accordance with the supplied sequence and reproduced at the reproduction unit 5 (reproduction unit 16 in the FIG. 2). Accordingly, for content which ends up being reduced in interestingness due to the insertion of commercial broadcasts in the middle, for example, movies, viewing becomes possible without interrupting the broadcast and therefore user dissatisfaction over commercial broadcasts can be reduced. Also, a different method of viewing of commercial broadcasts which are ordinarily boring is provided to the user and, at the same time, the commercial broadcasts are positively watched in comparison with the case where commercial broadcasts are unnaturally inserting not along with the flow of the

broadcast contents. Therefore, the effect of the commercial broadcasts as advertisements can be raised.

Also, at the time of reproduction of the commercial portions, it is possible to have the reproduction unit 5 (reproduction unit 16 in FIG. 2) reproduce a message for confirming the viewing of the commercial broadcast of the user at least one time and, at the same time, suspend the read operation of the broadcast data from the storage unit 3 (storage unit 13 in FIG. 2) and to restart the read operation and reproduction of the broadcast data when a response from the user with respect to this message is input to the input unit 8. By this, the user can be made to watch the commercial broadcasts which are reproduced all together, so the effect of the commercial broadcasts as advertisements can be raised.

Note that the sequence of reproducing the commercial portions may be the sequence of receiving them (that is, the broadcast sequence set on the station side) or the reproduction may be carried out by rearranging the sequence at random.

<Second Embodiment>

Next, an explanation will be made of a second embodiment of the present invention by referring to FIG. 6 and FIG. 7.

The second embodiment is for displaying images

corresponding to commercial portions specified at the time of recording a broadcast combined with the usual reproduced image of the broadcast to thereby enable the viewing of commercial broadcasts freely selected by the user in the middle of the reproduction of the broadcast.

Note that, as an example of the configuration of the information reproducing apparatus according to the second embodiment, the one explained in FIG. 1 or FIG. 2 can be applied as it is, so an explanation of the configuration of the apparatus is omitted. Also, FIG. 1 and FIG. 2 will be referred to in the following explanation.

Also, the recording operation of the broadcast data in the present embodiment is equivalent to the operation of the first embodiment explained by referring to the flow chart of FIG. 3, so also an explanation of this will be omitted. Hereinafter, the explanation will be made of the reproduction operation of the broadcast data according to the present embodiment.

When a signal from the user for instructing reproduction of the recorded broadcast is input to the input unit 8 (input unit 19 in FIG. 2), the instructed broadcast is read from the storage unit 3 (storage unit 13 in FIG. 2) and reproduced. Also, together with this, images corresponding to the commercial portions of the instructed broadcast, for example, still images of the

header portions of the commercial broadcasts or text, graphics, etc. indicating information relating to the commercial broadcasts (for example, information of the time of the commercial broadcasts) detected from the broadcast data are displayed at a predetermined portion on the screen. For example, in the example of the display screen of the reproduction portion shown in FIG. 7, the still images of the commercial broadcasts I2 are displayed in a line at an upper portion of a usually reproduced broadcast I1 according to the sequence of reproduction.

FIG. 6 is a flow chart for explaining an example of the reproduction operation of the broadcast data in the second embodiment of the present invention.

Step ST31:

It is decided whether or not the images corresponding to the commercial broadcasts displayed in the line on the display screen as in FIG. 7 are designated for viewing by an instruction Sc from the user input to the input unit 8. For example, a specific commercial broadcast is designated for viewing by the input of for example a number designating the commercial broadcast from a remote controller. When a commercial broadcast is designated for viewing, the broadcast being reproduced is interrupted and the processing shifts to

step ST32.

Step ST32:

The designated commercial broadcast is read from the storage unit 3 (storage unit 13 in FIG. 2) and reproduced. Also, after the reproduction of this commercial broadcast, an image, text, or graphic indicating that this commercial broadcast has been already reproduced is displayed on the display screen of the reproduction unit.

Alternatively, it is also possible to erase the image, text, or graphic corresponding to this commercial broadcast from the top of the display screen after the reproduction of the commercial broadcast. In this case, after all commercial broadcasts have finished being viewed, the commercial portions are all erased from the display screen.

Step ST33:

A flag indicating reproduction has been finished is set in each commercial broadcast reproduced at step ST32, then the processing returns to step ST31.

Step ST34:

When no commercial broadcast is designated at step ST31, in this step, it is decided whether or not the broadcast data to be reproduced is a commercial broadcast. When it is a commercial broadcast, it is



further decided whether or not the reproduction completion flag has been set for this commercial broadcast. When the reproduction completion flag has been set, the processing skips to step ST36, and this  
5 commercial portion is not reproduced.

Step ST35:

When it is decided that the broadcast data to be reproduced at step ST34 is not a commercial broadcast or when it is decided that the broadcast data is a  
10 commercial, but has not yet been reproduced, this broadcast data is read from the storage unit 3 (storage unit 13 in FIG. 2) and reproduced.

Step ST36:

It is decided at the controller 7 (controller 18 in  
15 FIG. 2) whether or not to finish the reproduction of the broadcast. For example, the reproduction of the broadcast is finished when the broadcast data stored in the storage unit 3 (storage unit 13 in FIG. 2) is finished or the end of reproduction of the broadcast is instructed by the  
20 user from the input unit 8 (input unit 19 in FIG. 2).

When such conditions for the end of reproduction are not satisfied, the processing returns to step ST31, and the reproduction of the broadcast data is continued.

As explained above, according to the information  
25 reproducing apparatus shown in FIG. 1 or FIG. 2 according

to the present embodiment, a sequentially supplied series of broadcast data is stored in the storage unit 3 (storage unit 13 in FIG. 2) linked with the supplied sequence. Also, based on the predetermined identification information contained in this broadcast data, the commercial portions of the broadcast data are detected at the commercial detector 6 (commercial detector 17 in FIG. 2). At the time of reproduction of the broadcast data, a series of broadcast data is read from the storage unit 3 (storage unit 13 in FIG. 2) in sequence in accordance with the supplied sequence and reproduced at the reproduction unit 5 (reproduction unit 16 in FIG. 2) and, at the same time, image information corresponding to the detected commercial broadcast information is generated and reproduced combined with the reproduced image of the series of broadcast data. Also, when a signal designating a commercial broadcast to be watched is input to the input unit 8 (input unit 19 in FIG. 2), the commercial broadcast designated by this signal is read from the storage unit 3 (storage unit 13 in FIG. 2) and reproduced. After this, at the time of reproduction of this series of broadcast data, the already reproduced commercial portions are no longer reproduced, but skipped, and the following broadcast data is reproduced. Accordingly, since images, text, or graphics

corresponding to the commercial broadcasts contained in the reproduced broadcast are displayed to the user on the reproduction screen, the user can be made to watch the commercial broadcasts. Also, the user can select and  
5 watch commercial broadcasts at any point of time and in any sequence, therefore the opportunity for selecting and watching the commercial broadcasts by his or her own intent is given to the user - who has conventionally been made to watch commercial broadcasts in a passive state -  
10 and a different method of viewing usually boring commercial broadcasts is provided to the user, so the effect of the commercial broadcasts as advertisements can be raised.

Summarizing the effects of the invention, according  
15 to the present invention, a user can be made to watch the commercial broadcasts. Also, a method of viewing commercial broadcasts different from the conventional method is provided to the user. At the same time, the method of viewing commercial broadcasts can be designated  
20 in accordance with the intent of the user. Therefore, the effect of the commercial broadcasts as advertisements can be raised.

While the invention has been described with reference to specific embodiments chosen for purpose of  
25 illustration, it should be apparent that numerous

modifications could be made thereto by those skilled in the art without departing from the basic concept and scope of the invention.